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ABSTRACT

The bilingual program described in this booklet offers intermediate-grade English and Spanish instruction to Spanish-speaking children from an economically disadvantaged neighborhood in one of Chicago's largest school districts. The descriptive information presented here concerns context and objectives, necessary personnel, educational methodology, parent-community involvement, subject-area objectives, textbooks, costs, and details on program evaluation. (VM)

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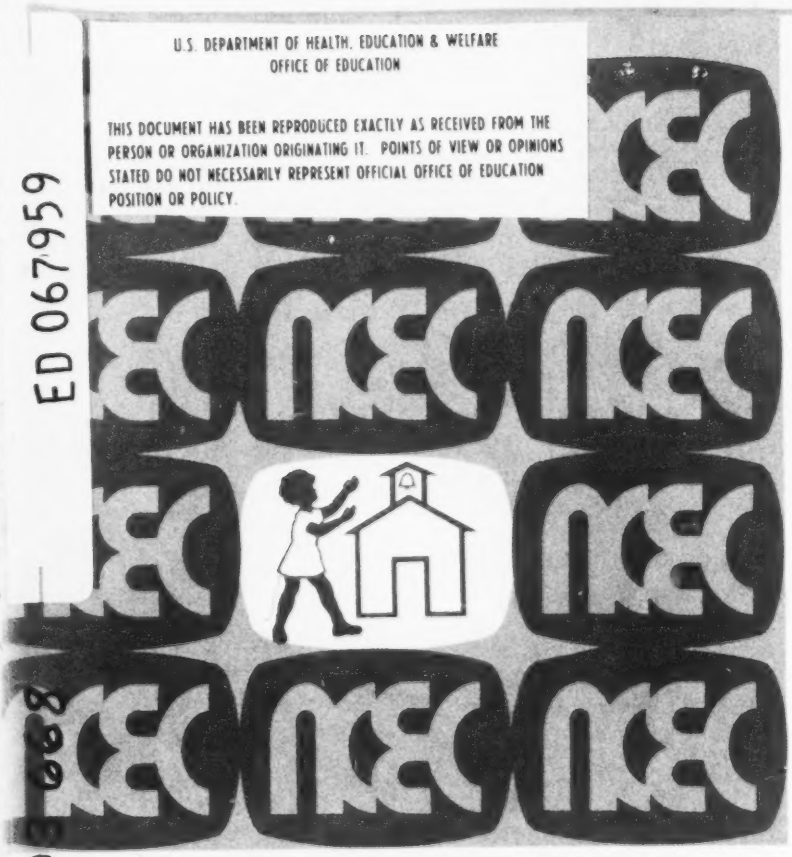

Model Programs

Compensatory Education

The Juan Morel Campos Bilingual Center
Chicago, Illinois

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The Juan Morel Campos Bilingual Center
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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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FOREWORD

This is the third in NCEC's *Model Programs* series, whose purpose is to inform educators about successful ongoing programs and to provide them with sufficient information to decide if locally modified replications would be desirable. Included in this series are descriptions of 15 "successful" compensatory education programs for disadvantaged children currently operating in the Nation's schools.

Under contract to the Office of Education, the American Institutes for Research in the Behavioral Sciences, Palo Alto, Calif., identified—through a literature search and nominations by local, State, and national educational agencies—over 400 candidate programs in this area. Of this number only 17 met the stringent criteria for success established by AIR in conjunction with OE. It should be noted that most of the programs rejected during the study were not rejected because they were demonstrated failures but rather because their evaluation methodology was so inadequate that a conclusion about success or failure could not be drawn.

Short descriptions of each program in the series have been prepared, covering such topics as context and objectives, personnel, methodology, inservice training, parent involvement, materials and equipment, facilities, schedule, evaluation data, budget and sources for further information.

Six of the programs in this series were formerly written up in the *It Works* series published by OE in 1969. These six continue to operate successfully, as evidenced by the evaluation data; and since the *It Works* booklets are out of print, the program descriptions have been updated and included in this *Model Programs* series.

Two other programs—Programed Tutorial Reading Project, Indianapolis, Indiana, and Summer Junior High Schools, New York, New York—identified as exemplary compensatory education programs were included in the former *Model Programs* series on reading. Since these program descriptions are still available from the U.S. Government Printing Office, they were not republished for this series.

Two previous *Model Programs* series have been issued—on reading (10 programs) and childhood education (33 programs). Booklets on these programs are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for 15 to 25 cents each.

The Juan Morel Campos Bilingual Center

Chicago, Illinois

Overview

The Juan Morel Campos Bilingual Center (formerly known as the Lafayette Bilingual Center) offers intermediate-grade English and Spanish instruction to Spanish-speaking children from an economically disadvantaged neighborhood in one of Chicago's largest school districts. The center was started to meet the critical academic-social needs of intermediate-grade children, newly arrived from Spanish-speaking countries, who had no hope of keeping up with their Anglo peers when taught in conventional sixth-, seventh-, and eighth-grade classrooms.

The center's objectives are to develop Spanish-speaking children's English listening, speaking, reading, and writing skills while strengthening literacy in their native language; to improve their academic achievement in science, math, and social studies; to impart an awareness and pride in their cultural heritage; and to integrate this heritage with that of the United States mainland. Fifteen Anglo children (non-Spanish-speaking, including blacks) who voluntarily attended the center, were instructed in their regular sixth- through eighth-grade curriculum, were taught Spanish, and acted as English-speaking models for the Spanish children. Interaction between the two groups was encouraged through special bilingual conversation classes, integrated math, science, and social studies classes, and frequent bicultural social events.

The center's program has a staff of six bilingual classroom teachers. Spanish-speaking children are initially taught academic subjects in Spanish; then slowly, the teachers help them make the transition to English. About half of each day is spent in intensive English instruction; the other half is devoted to the regular upper elementary curriculum: math, social studies, and science. This basic schedule is adjusted once a week to provide for music and art instruction, health education, sewing lessons (girls), and physical education. Anglo children follow the same schedule, but substitute regular language arts instruction and Spanish classes for the intensive English (second language) classes attended by the Spanish children.

The children are grouped by English proficiency levels in ungraded classes. All children are required to meet a standard set of objectives, with individual needs met through difficulty-level adjustments, specially developed practice materials, and other resource aids. A small teacher-pupil ratio of approximately 1:16 facilitates individual and small-group instruction. Particular emphasis is placed on diagnosing and meeting the learning problems of each child. Frequent subject-matter tests, developed by the center staff for all content areas, are routinely used for this purpose.

Spanish editions of the Short Test of Educational Ability and the Test of General Ability are administered at the beginning and end of the school year. In both cases, results of the nonparametric "sign test" have indicated that there was a statistically significant increase in the IQ of the students tested. Achievement gains in language and math skills over the same 8-month period are measured by various subtests of the Metropolitan Achievement Tests (MAT). Statistically and educationally significant gains in English reading, spelling, language, and arithmetic problem solving were noted on the elementary level MAT (taken in English). Statistically and educationally significant

gains in reading and arithmetic problem solving were also observed on local Spanish translations of three intermediate level MAT subtests.

Description

Context and Objectives

The Juan Morel Campos Bilingual Center is located in a high-density, economically disadvantaged, Spanish-speaking community of predominantly Puerto Rican families. Unemployment is slightly higher in the community than in the Nation, with most of the employed parents holding unskilled or semiskilled jobs. Nearly half of the district's enrollment receives free lunches.

The center is located in Chicago's District 6 which serves 30,000 children in its 25 elementary schools (grades K-8) and 2 high schools, accounting for almost half of Chicago's school enrollment. Approximately 75 percent of the students in the district speak Spanish, and many have just arrived from Spanish-speaking countries. Although the absolute enrollment level remains fairly constant, considerable within-district transfer results in somewhat unstable enrollments in the individual schools.

Past experience indicated that school achievement of Spanish-speaking children was very low and that academic-social handicaps prevented them from benefiting fully from the regular school experience. In addition, their high school (and even elementary) dropout rate was alarmingly high. The district pressed for a special program which would help these youngsters catch up academically, motivate them to continue their education, and nurture pride in their Spanish heritage. The long-range expectation was that students who completed such a bilingual program would enter district 6 high schools with the academic skills, motivation, and self-confidence necessary to successfully complete the regular high school program. It was therefore decided to develop a special

program for Spanish-speaking children who met the following criteria: 11–14 years of age, recent arrival to the United States mainland, apparently normal IQ, and no severe behavioral problems.

Housed within a district 6 elementary school, the center operates as a "school-within-a-school." In addition to its predominantly Spanish-speaking student population, the center has a small group of Anglos who volunteered to study Spanish and continue their academic studies at the center. During the 1969–70 school year (the second year of the program), the center served 80 pupils (65 Spanish- and 15 English-speaking children), and was financed by funds from ESEA title I and title VII, and the local board of education.

The center staff, guided by an eclectic bilingual-education philosophy, developed a set of linguistically sequenced instructional objectives, materials, and methodologies for a sixth- through eighth-grade curriculum in which Spanish-speaking children were provided with intensive English instruction and were taught academic subjects in Spanish and English. The program was also designed to strengthen Spanish literacy, teach English, enhance self-image, and increase appreciation of Spanish history and culture.

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Personnel

The full-time staff of the center includes the following:

Project director. The director of the Chicago Public Schools (ESEA title VII) Bilingual Education Program assumes general supervisory responsibility for five bilingual centers, of which the center is one.

Center director. The director is the principal of another elementary school in the district. She and the staff developed the objectives for the program during the summer of 1969. She also assumes the general supervisory duties of the center.

Head teacher. The major responsibility of the head teacher is to coordinate and supervise the center program. In addition to overseeing the instructional program for students, she conducts the teachers' inservice training.

Anglo-bilingual teachers (3). The Anglo-bilingual teachers teach three periods of English daily to the Spanish children at the center.

Spanish-bilingual teachers (3). The three Spanish-bilingual teachers teach social studies, science, mathematics, and Spanish reading and writing to each child at the center.

Resource teacher. The Bilingual-Spanish Resource Teacher has a number of responsibilities: conducting English and Spanish literacy classes for parents of center children; tutoring children in English; conducting special testing of the center's children; carrying out followup of center graduates; and assisting the school-community representative in connection with parent-community contacts.

Bilingual teacher aides. Aides receive special inservice training for the center program. They do not play an instructional role, but instead assist the six teachers by preparing bulletin boards, correcting papers, keeping records, and assisting in supervision of children in the hallways.

School-community representative. The school-community representative visits parents and helps them solve problems regarding their children's school work and special health needs. She also encourages parents to come to school for meetings, programs, English and Spanish classes, and in general serves as liaison between the school and the home.

Clerk. A bilingual clerk performs secretarial work for the center. Her duties include typing, ordering books and supplies, recordkeeping, and distributing carfare to the

children. The clerk receives special inservice training in connection with her work for the center.

In addition to the above full-time personnel, the center is served part time by a music supervisor and an artist-in-residence who is a professional musician. Both musicians give instruction to the children for 2 or 3 hours weekly in the playing of steel drums, percussion instruments, and guitars.

Methodology

In addition to sharing the center's broad cognitive and affective goals, the various content areas have certain organizational and procedural characteristics in common. First, classes are ungraded with students grouped according to knowledge of English instead of by age. For report card purposes, however, children are nominally assigned to grade six, seven, or eight. Second, Spanish-speaking students are initially taught in their native tongue in each content area, gradually making the transition to English at some point after their first year at the center. Third, instruction proceeds from the simple to the more complex, as Spanish speaking students gradually increase their proficiency in oral and written English communication and accumulate a background of fundamental concepts and principles in each of the core subjects. Finally, extensive use is made of diagnostic tests to identify special learning problems. Subject-matter tests developed by center teachers are used weekly, and often before and after the semester's instruction, to measure the extent to which objectives have been attained. Results of the diagnostic and criterion-reference tests guide the teacher in proper placement of the student at an appropriate level of instruction and in tailoring activities to the needs of each individual. A small teacher-pupil ratio, usually about 1:16, facilitates the application of various individualized instructional techniques.

TESL (Teaching English as a Second Language).—Spanish-speaking students

attend three 40-minute periods of intensive English instruction every morning, 4 days a week. One day a week, the three periods normally scheduled for TESL are devoted instead to music, art, and special tutoring in math, civics, and English. Objectives relating to the demonstration of listening, speaking, reading, and writing skills are divided into three levels of language development: basic (level I), intermediate (level II), and advanced (level III). Theoretically, a student would complete one level per year during his 3 years at the center. Listening and speaking skills are stressed at level I, with only one-fifth of classroom time spent on reading and writing. At level II classroom time is divided equally between audio-lingual and visual-graphic skills. At level III reading and writing skills are stressed, with about one-third of classroom time spent on listening and speaking skills. As the labels for each of the three levels of language development suggest, the material at each level is progressively more difficult. Similarly, within each level more advanced skills are developed after simpler skills have been taught. Every lesson involves review of previously learned pronunciation, intonation, stress, structures, and vocabulary in connection with the introduction of new skills.

Basic vocabularies are developed for various topics which are common at all three levels. As the topic recurs at each level, the appropriate "topic vocabulary" is introduced. For example, the basic vocabulary for the weather topic might be "warm, hot, cold, cool." The intermediate vocabulary for the same topic might be "humid, sticky, chilly, windy." The advanced vocabulary for the weather topic might consist of "foggy, cloudy, dreary, clear." The subtle differences in difficulty from one level to the next are apparent if one thinks about the underlying concepts for each vocabulary level in the example. The vocabulary is introduced in grammatical structures which the students already know. ("It is cool.") New grammatical structures are taught with known vocabulary. ("It's cool. Maria could not keep cool today. Is it cool today? No, it isn't.")

The main TESL materials and techniques used to produce oral facility in English are (1) specially developed "dialogs," (2) patterned practices, (3) structure drills, (4) directed conversation, (5) substitution drills, (6) role playing and dramatics, (7) special language games, and (8) use of commercially available materials including flash cards, filmstrips, Peabody Language Development Kits, and a Language Master. A sample dialog for the Basic Level students is presented under the heading, "Specific Example of Methodology." Examples of structured drills and directed conversation are also given.

In addition to the specially developed TESL materials, a variety of textbooks, geared to the needs and capabilities of students at the Basic, Intermediate, and Advanced TESL levels, are used. Chapters in each book are linguistically sequenced as well, with simpler language patterns preceding the more complex grammatical structures and vocabularies. Textual materials (in addition to the center-developed "dialogs") are used for oral drills as well as for the development of reading skills. Textbooks written in English include those which would be read by students in the various level II or III content areas of social studies, math, and science. (Level I is the only level with all content subjects taught in Spanish, regardless of a student's entering English proficiency level.)

A classroom library composed of books written at various English difficulty levels is provided for students to check out and read at their leisure. Periodically, newspapers and magazines are distributed to the students to keep. No assignments or reports are required of the students in this independent phase of the reading program.

The weekly "bilingual class."—Once a week a period is set aside for a "bilingual class" made up of Anglo children and an equal number of Spanish-speaking children. Two teachers conduct the class. The Spanish teacher coordinates and directs the first 15 minutes of the period, at which time the children converse in Spanish. The

Spanish children serve as models in pronunciation, intonation, and accent for the Spanish speech patterns that the Anglo children practice. The next 15 minutes is directed by the TESL teacher. During that period English is spoken and the Anglos "model" for the Spanish children. The last 10 minutes are spent in controlled conversation between Spanish and Anglo children speaking both languages in small, mixed groups. The topics which formed the basis for these conversations are patterns practiced in previous lessons. Whenever possible, conversations deal with the awareness and appreciation of Anglo and Spanish cultural differences. English and Spanish songs are often used to "break the ice" during the conversation period. The children gradually learn to converse with each other in both Spanish and English without fear or embarrassment. As they progress in language proficiency, the time allotted for this final activity is increased and the teacher assumes a less important role. Spanish students monitor the Spanish conversation of their Anglo peers, while the Anglo children act in turn as "informants" when Spanish children are conversing in English. To promote enjoyment of cultural differences, socials are held where music and food typical of both South and North America are introduced.

Science.—Science objectives require students to meet specified mastery levels for various product objectives, including the following: discovery, description, and explanation of specified cause-and-effect relationships; formulation and execution of appropriate processes for solving given application problems; conduct of scientific experiments; answering of questions designed to test knowledge of contributions of identified scientists, relationships between given scientific discoveries and enumerated political and social events; and demonstration of reading comprehension based on randomly selected passages from a fifth-grade science textbook.

No totally adequate science textbooks have been found for use with the Spanish-

speaking students. The teacher therefore relies heavily on supplementary materials and tests he developed himself. These materials are based upon behaviorally stated science objectives such as those listed before. The objectives, which follow in general the district curriculum guide for grades six through eight science instruction, are the same for students of all English proficiency levels, but the means for attaining a given objective varies according to the student's special needs and capabilities. For example, students at basic, intermediate, and advanced English proficiency levels study the same concepts, but use different source materials especially selected to correspond to their level of language development. As much as possible, TESL techniques and abundant, specially developed visuals are used in teaching science concepts and skills. For example, before explaining scientific concepts or conducting laboratory experiments, the basic scientific vocabulary involved is first introduced and explained in Spanish. Once the vocabulary is mastered (this might take the full 40-minute period), concepts are introduced through simple problems and experiments. Explanations are made in English using the known scientific vocabulary and familiar grammatical structures. Tests are given in Spanish as well as English. Visuals accompany problem-solving exercises to enable basic level students to arrive at a solution as readily as students at the intermediate or advanced English proficiency levels.

Mathematics.—Mathematics objectives correspond fairly closely to objectives outlined in the regular curriculum guide for mathematics instruction in grades six through eight. These objectives include attainment of elementary computational and problem-solving skills, as well as acquisition of basic mathematics vocabulary and concepts. As an introduction to future work in mathematics which the students might encounter both in and out of school, they are exposed to techniques of factoring; solving equations; finding areas; measuring in standard units with rulers, protractors, and compasses;

structures and symbols of basic numeration systems; and concepts related to points, lines, line segments, rays, planes, and circles.

Resource materials include Spanish and English mathematics textbooks along with special materials and subject-matter tests developed by the teacher. As in the other core courses, frequent testing makes it possible to identify students who need special help. Instruction is individualized in a variety of ways, including tutoring by fellow classmates, individual and small-group activities, and provision for extra time when the teacher can give special attention to an individual student's particular learning problem. Using the TESL approach, learning of minimal, basic mathematics vocabulary precedes each lesson, with subsequent lessons devoting some time to review and reinforcement of prior learnings. Similarly, throughout the carefully sequenced series of math lessons, exercises and supplementary materials move from simple to more complex concepts and operations. As in the other content areas, learners are systematically guided to increasing independence from their teacher. Every effort is made to insure that each student succeeds in attaining lesson objectives and to make sure his success is evident to him. English explanations are provided in as many varied ways as possible, often acting out, drawing, using pictures, and encouraging students to reach their own conclusions and present to the class their own "invented" explanation of how they understand the math problem. An effort is made to provide the student with a classroom atmosphere in which he can feel relaxed, confident, and curious.

Social studies.—Objectives focus on enhancing the student's pride in his native culture and in developing an acceptance of his new culture. Simple, basic concepts and processes are stressed, rather than complex and subtle ideas. Elementary concepts are developed in conjunction with material on the history and geography of South America, Puerto Rico, Mexico, and North America. Map reading is also emphasized. Again, as

in the other content areas, basic vocabulary is introduced so that students can answer "pivotal questions" in English. The pivotal questions, used to add structure to each lesson, focus on issues which children at various English proficiency levels can readily grasp and verbalize in familiar grammatical structures. For example, pivotal questions during map study might inquire about the meanings of the map's colors and symbols. Students would then explain by means of their newly learned basic vocabulary that colors and symbols indicate mountains, valleys, bodies of water, etc. Further discussion might elicit from students the concepts that "people, animals, fish, birds, flowers, air, and sunshine are there." Individualization of instruction is accomplished through a variety of activities and creative projects which can be adapted to the student's developmental level, with advanced assignments supplementing the regular classroom activities for the more able students. In addition to the various resource books, teacher-prepared summaries of main concepts are distributed to the children.

Daily schedule.—The school day begins at 9:00 a.m. and ends at 3:00 p.m. with 30 minutes for lunch. The Spanish children spend half of their school day (three periods) in TESL classes and the balance of the day in math, science, social studies, and Spanish reading and writing classes. The Anglo children attend the same math, science, and social studies classes, spending the balance of their day in language arts classes (two periods) and Spanish classes (two periods). Once a week all children receive music and art instruction, physical education, health instruction, and sewing lessons (girls).

Physical plant.—The six classrooms used by the center are located within a very old elementary school in district 6. No special remodeling or improvement in classroom facilities was made for the program.

Materials and equipment.—Due to limitations of space, only a sample of the textual

and audiovisual materials and equipment used at the center is given here. More complete details may be obtained from center staff.

TESL Textbooks:

- Basic Level
  - *English This Way* (MacMillan)—audiolingual focus
  - *English for Today* (McGraw-Hill)—audiolingual focus
  - *Reading Round Table* (American)—reading focus
  - *Bank Street Readers* (MacMillan)—reading focus
- Intermediate Level
  - More advanced books in the *English This Way* and *English for Today* series—audiolingual focus
  - More advanced books in the *Reading Round Table* series—reading focus
  - *Miami Linguistic Readers* (Heath & Co.)—reading focus
  - *Reader's Digest Skill Builders*—reading focus
  - *Let's Learn English Crosswords* (American)—writing focus
  - *Ananse Tales* (Columbia Teachers College Press)—writing focus
  - *Specific Skill Series* (Barnell Loft)—specific skill focus
- Advanced Level
  - Most advanced book in the *English This Way* series—audiolingual focus
  - More advanced books in the *Reading Round Table* and *Reader's Digest Skill Builders* series—reading focus
  - *Guided Composition* (American Language Institute)—writing focus
  - *Specific Skill Series* (Barnell Loft)—specific skills focus

TESL Audiovisual Materials and Devices:

Peabody Language Development Kit	Overhead projectors
Language Masters	Filmstrip projector
Tape recorder	Record player
Radio	Pictures
Television	Filmstrips
Flash cards	Phonograph records

Spanish Textbooks used in some content areas:

Matemática 3 (Laidlaw)
Matemática 4 (Laidlaw)
Matemática 5 (Laidlaw)
Matemática 6 (Laidlaw)
Una Mirada al Pasado (Laidlaw)
Aventuras Por Mundos Vesconocidas (Laidlaw)
Nuestro Mundo Maravilloso (Laidlaw)
América de Todos (Rand-McNally)
Protección de la Salud (Laidlaw)
Por Esos Caminos (Laidlaw)
Comedias Interpretadas (National Textbook)

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Inservice training.—In addition to guidance provided in the *District 6 Handbook* for newly assigned elementary school teachers, special inservice training sessions for center teachers are held from 8:30–9:30 a.m., twice a month. Major activities during these hourly sessions are preparation of behavioral objectives, presentations by subject-matter consultants, orientation to the center's unique program and methodology, and discussion of testing results.

Parent and community involvement.—Home visitations are made by the school-community representative and the Spanish resource teacher throughout the year. In this way they become acquainted with the child and his family. They help the family wherever possible regarding problems the child might be experiencing at school. Very often, previously undetected or untreated health problems are brought to the parents' attention and arrangements are made by the center to provide the necessary medical or dental care. As a result of home contacts, parent opinion about the role of the center is obtained. In response to parent requests, a class in English was organized at the center for adults. The neighborhood library loans books to the center library for use by the children. The center's advisory council, made up of parents and members of the community, meets to discuss and recommend ways in which the center can improve its operations.

Dialogs are developed by center staff for the basic, intermediate, and advanced English proficiency levels. Each dialog sheet is divided into sections which can be classified as (1) introduction of the grammatical patterns to be taught, (2) structure drills, and (3) directed conversation. Examples of these three kinds of activities are given below, based on excerpts from an actual dialog sheet for the basic level student.

1. *Introduction of grammatical patterns to be taught.*

   Interrogative forms: Who, What, Where, How, When
   Present progressive: -ing

   Illustrative dialog: Margarita: Hi, Rafael. Where are you going?
   Rafael: I'm going to the ball park.
   Margarita: What are you going to do?
   etc.

2. *Structure drills.* Structure drills include several repetition drills and substitution drills. In a repetition drill, the student repeats after the teacher, copying his intonation, pronunciation, and accent. In a substitution drill, the student completes sentences by supplying correct grammatical structures and by using learned vocabulary.

Example of a repetition drill:

I am playing in the park.
You are playing in the park.
He is playing in the park.
She is playing in the park.
etc.

Example of a simple substitution drill:

Mary is watching the game.
You are . . .
I am . . .
We are . . .
etc.

Example of a multiple substitution drill:

I am playing in the park.	
. . . in the school yard.	(Class: "You are playing . . .")
He . . .	(Class: ". . . is playing in the school yard.")
They . . .	(Class: " . . . are playing in the school yard.")

3. *Directed conversation.* Following is an example of a conversation between two members of the class who are directed by the teacher.

Teacher directs: "Rafael, ask Margarita where she is going."

Rafael responds: "Margarita, where are you going?"
Teacher directs: "Margarita, tell him you are going to the park with your brother."
Margarita responds: "I am going to the park with my brother."

Budget

Based on an estimated enrollment of 100 students, the 1969–70 budget for the center was allocated as follows:[1]

Salaries	
Professional staff	$ 89,500
7 teachers (1 resource and 6 classroom)	
1 head teacher	
Nonprofessional staff	21,900
2 teacher aides	
1 school-community representative	
1 clerk	
Subtotal	111,400
Books, Materials, and Supplies	
Books (including library)	2,132
Instructional materials and supplies, such as records, tapes, charts, etc.	788
Total	2,920

[1] The above budget does not include costs of inservice curriculum writing or fringe benefits for professional and nonprofessional staff; these were partially defrayed by Elementary and Secondary Education Act title VII funds.

Pupil Transportation (100 days @ 50¢ per day)	2,250
TOTAL	$116,570

The actual program enrollment during the 1969–70 year was 80, yielding a per-pupil cost of approximately $1,457. About 95 percent of this cost was for salaries. Program funds were supplied by three sources in the following proportions: ESEA title VII, 46 percent; ESEA title I, 38 percent; and Board of Education for the Chicago Public Schools, 16 percent.

Evaluation

The first formal evaluation of the center's program was conducted during the 1969–70 academic year (Brauer, 1970). The primary objective of the evaluation was to determine the effect of the center on student aptitude, achievement, and level of anxiety. Pretests were administered at the beginning of the academic year and posttest data were collected 8 months later. The entire Spanish-speaking student body of the center was administered all tests; however, due to attendance problems at the testing session, complete pre- and posttest data were collected on slightly fewer than the 65 Spanish-speaking students enrolled in the center.[2]

Evaluation plans called for a comparison of the center's test results to those of a comparable control group not attending the center. However, space was found in the center for almost the entire population of students from which the comparison group

[2] In all cases the same form of test was used for pretest and posttest. Alternate forms were not available for any of the tests except the Metropolitan Achievement Tests and they were not used. Some caution is therefore suggested in interpretation of these results.

was to be formed. Consequently, the data presented here are for program students only, with comparison made to norms, where appropriate.

Aptitude

Phase 1 of the evaluation was concerned with the effect of the program on the students' aptitude. Aptiude test scores tend to remain constant over repeated testings since gains in "achievement" on these tests tend to increase at the same rate as the testee's maturation. Theoretically then, any reliably measured, statistically significant gain in ability-test score can be considered to be educationally significant.

It was hypothesized that the bilingual program would enrich the experiential background of the students to the degree that their IQ scores would be higher on the posttest than the pretest. Spanish editions of two abilities tests, published by Science Research Associates, the Short Test of Educational Ability (STEA) and the Test of General Ability (TOGA), were administered to the students at the beginning and end of the academic year. Complete pretest and posttest data were available on 56 students for the TOGA and 60 students for the STEA. The nonparametric "sign test" [3] was used to test the significance of the differences between the pretest and posttest scores for both TOGA and STEA. In both cases, the results of the sign test indicated that there was a statistically significant increase in the IQ of the students tested. The TOGA pretest median IQ was 82.0 and the posttest median was 90.0, for a median IQ gain of 8 IQ points. STEA scores were reported in median stanines, with a pretest median score of 3.75 and posttest stanine of 5.29. These stanines correspond to a median pretest percentile rank of approximately 20 and a median posttest percentile of approximately 47.

It was concluded that the center's program resulted in a statistically and educationally significant gain in the participants' aptitude as measured by the Spanish editions of the TOGA and STEA.

[3] Siegel, S. *Nonparametric statistics for the behavioral sciences.* New York: McGraw-Hill, 1956.

Achievement

The second phase of the evaluation focused on the measurement of achievement gains in the ability to (1) recognize printed English words, (2) discriminate between printed English words, (3) read and comprehend paragraphs in English, (4) spell English words, (5) use correct written English forms, and (6) solve arithmetic problems and understand arithmetic concepts expressed in English. The Word Knowledge, Word Discrimination, Reading, Spelling, Language, Arithmetic Problem Solving and Concept tests of the Elementary Battery of the Metropolitan Achievement Tests were administered at the start of the year and 8 months thereafter to evaluate the gains corresponding to each of the above skills. Table 1 summarizes the results in terms of mean grade-equivalent pretest, posttest, gain, and standard deviation of gain scores.

Table 1.—Summary of grade-equivalent status on the Metropolitan Achievement Tests, Elementary Battery (N=61)

Test	Pretest	Posttest	Gain	Gain std. dev.
Word Knowledge	2.85	3.55	.70	.75
Word Discrimination	2.77	3.35	.58	.50
Reading	2.94	3.96	1.02	.84
Spelling	3.02	4.07	1.05	.60
Language	1.98	3.36	1.38	1.10
Arithmetic Problem Solving and Concepts	3.79	4.63	.84	.84

All of the test grade-equivalent gains were found to be statistically significant. In terms of educational significance, the expected gain for the "average" student during

the 8 months between testing was .8 grade-equivalent units. On the basis of the expected norm, Table 1 illustrates the fact that the center's students made educationally and statistically significant gains in the ability to read and comprehend paragraphs in English, spell English words, use correct written English forms, solve arithmetic problems, and understand arithmetic concepts expressed in English. It was concluded that the center attained its goals in the areas of reading, spelling, language, and arithmetic problem solving and concepts. The gains in the Word Knowledge and Word Discrimination tests were statistically but not educationally significant.

The Arithmetic Computation test, Intermediate Level, of the Metropolitan Achievement Test was also administered to the same students on a pretest and posttest basis. Since the test was at the intermediate level and the students were just learning English, some additional instructions in Spanish were provided. Also, as expected, the gains were not as dramatic as those for the elementary level tests. In terms of grade-equivalents, the mean pretest score was 5.07, the posttest mean was 5.67, and their difference was .60. A *t* test found this gain to be statistically significant. The expected gain for an average student during the 8 months between testing was .80 grade-equivalent units. It was concluded, on the basis of the evaluation, that the students made a statistically but not educationally significant gain in arithmetic computation.

Also administered on the same pretest and posttest schedule was a local Spanish translation of the Intermediate Level of the Metropolitan Achievement Word Knowledge, Reading, and Arithmetic Problem Solving tests. The norms for the English standardized version of the tests were used to arrive at the grade-equivalents, since the translation was not restandardized.

Table 2 illustrates the mean pretest, posttest, gain, and standard deviation of the gain scores for the three tests. Mean gains on the three tests were found to be statistically

significant on the basis of *t* tests for repeated measures. The mean gain in Reading and Arithmetic Problem Solving, but not in Word Knowledge, was found to be greater than the expected norm of .8, and therefore was considered to be educationally significant.

Table 2.—Summary of grade-equivalent status on the local translation of the Metropolitan Achievement Tests, Intermediate Level (N=61)

Test	Pretest	Posttest	Gain	Gain std. dev.
Word knowledge	5.46	5.99	.53	.75
Reading	4.38	5.28	.90	1.07
Arithmetic problem solving	5.18	6.04	.86	.93

On the basis of a comparison of tables 1 and 2, several points can be made in regard to students' achievement in the center. In terms of Word Knowledge, Reading, and Arithmetic Problem Solving, mean gains were essentially similar regardless of whether the students were tested on an elementary level achievement test in English (table 1) or on a secondary level test in Spanish (table 2). In both instances students had statistically and educationally significant mean gains in both Reading and Arithmetic Problem Solving. Their mean gains in Word Knowledge, though statistically significant, failed to reach educational significance on both the English and Spanish tests. Comparison of their posttest scores in English (table 1) and Spanish (table 2) on the tests common to both test administrations indicates that at the end of the academic year the students were 2.44 mean grade-equivalent units higher in Spanish word knowledge than in English word knowledge, 1.32 units higher in Spanish reading than in English reading, and 1.41

grade-equivalent units higher in Spanish arithmetic problem solving than in English problem solving. On the basis of these findings it can be concluded that the center's students had similar achievement gains in both their native language and in English. However, at the end of the academic year, they were still achieving at a higher absolute level in their native language than in English.

Noncognitive Measures

The final phase of the evaluation was concerned with testing the hypothesis that the students' experience in the center would tend to increase their drive to succeed. The instrument selected to measure "drive to succeed" was a local Spanish translation of The Jr.-Sr. High School Personality Questionnaire Anxiety Scale (Institute for Personality and Ability Testing, Champaign, Illinois). The Anxiety Scale of the questionnaire was read to the students in Spanish at the beginning and end of the academic year. The test used to test the hypothesis that the number of increases in anxiety scores was greater than the number of decreases approached, but failed to reach, statistical significance.

Since the results approached statistical significance, an item analysis of the scale was conducted. The item analysis did not provide any insight as to whether the increases in anxiety scores were due to increased drive to succeed or to internal fears and stresses. However, the evaluator concluded that it was doubtful that the increase was due to unreal fears, since anxiety scores at posttest were relatively low compared to the norm.

In summary, 8 months' experience in the Bilingual Center resulted in (1) an increase in the participants' IQ, (2) statistically and educationally significant gains in English reading, spelling, language, and arithmetic problem solving, and (3) statistically and educationally significant gains in Spanish reading and arithmetic problem solving. The program did not achieve its goals in the areas of word knowledge and word discrimination, as measured by Metropolitan Achievement Tests.

Sources for Further Information

For information concerning the Juan Morel Campos Bilingual Center program, the following individuals may be contacted:

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References

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Two programs also identified for this series were described in the *Model Programs—Reading* series: Programed Tutorial Reading Project, Indianapolis, Indiana, and Summer Junior High Schools, New York, New York. Since these program descriptions are still current and available from the Superintendent of Documents, U.S. Government Printing Office, they were not rewritten for this series.